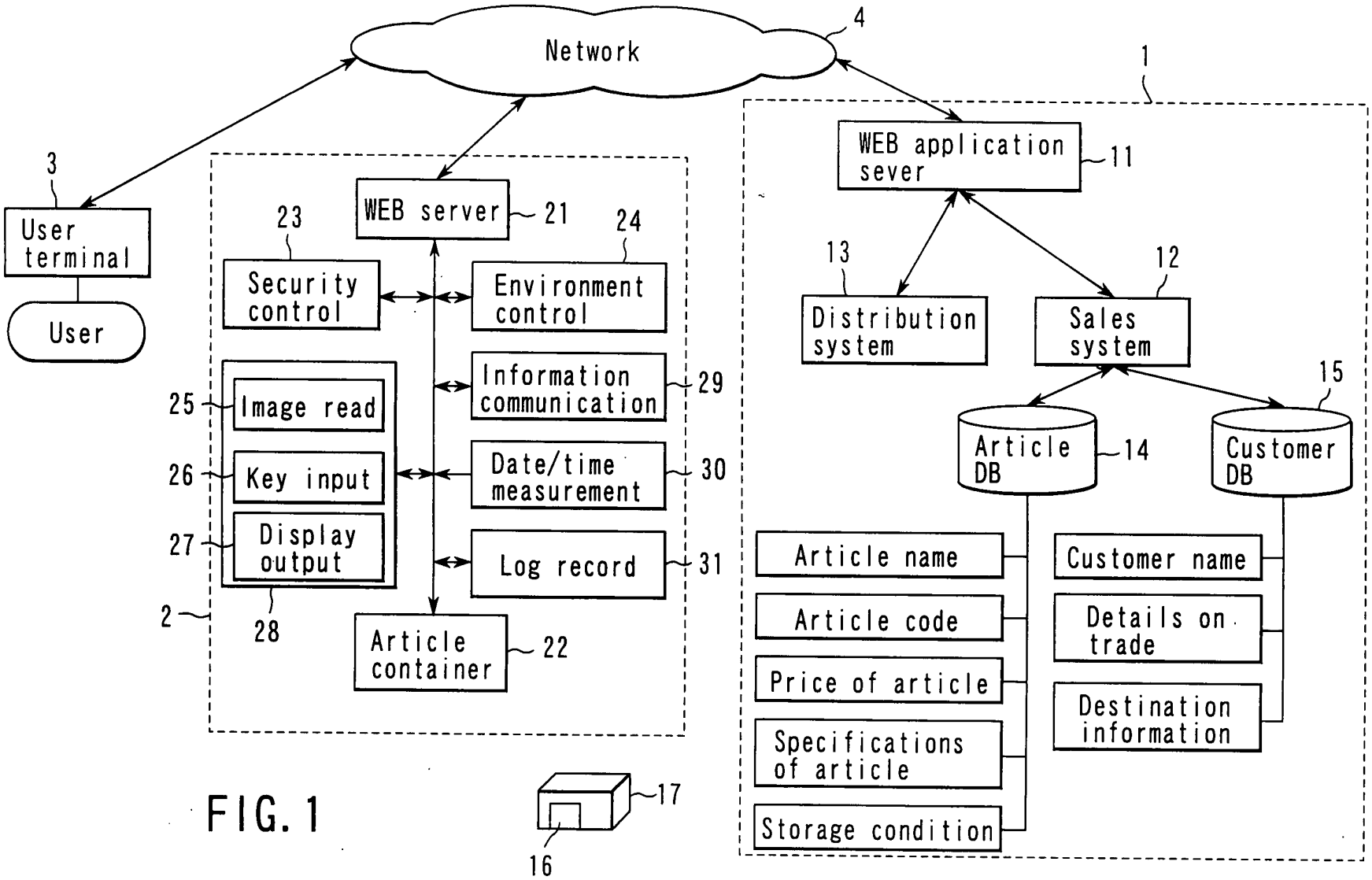

Network
4
1
3
User terminal
User
WEB server
21
23
24
Security control
Environment control
Information communication
29
25
Image read
26
Key input
27
Display output
28
2
Date/time measurement
30
Log record
31
Article container
22
WEB application sever
11
13
12
Distribution system
Sales system
15
Article DB
14
Customer DB
Article name
Article code
Price of article
Specifications of article
Storage condition
Customer name
Details on trade
Destination information
17
16

FIG. 1

Example of customer database

Item	Example of data contents
Order number	20001210-101
Orderer	○○○○ Mr/Ms.
Destination name	○○○○ Mr/Ms.
Destination address	12345 cho, Mishima city, Shizuoka prefecture
Delivery contact address	box1221@ansinbox.ne.jp
Delivery contact address	3nasubi@internet.ne.jp; tel10559123456
Password	h12b3-4cd2h
Storage function	on
Notification function	on

15

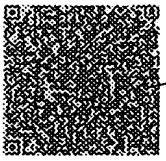
Example of article database

Item	Example of data contents
Article code	490123456789
Article name	Economy regular coffee pack
Price of article	4980 yens
Specifications of article	400g-packs x 10
Storage condition	-10℃～6℃
Notes	Available up to :2001/10/26

14

Combine data

Example of two-dimensional data



18

Adhere on article to be delivered

FIG. 2

Example of contents of encoded article information code

```
[Article]
Article code: 490123456789
Article name: economy regular coffee pack
Price of article: 4980
Specifications of article: 400g-packs x 10
Storage condition: -10,.6
Notes: Available up to: 2001/10/26
[Trade]
Order number: 20001210-101
Orderer: ○○○○
Destination name: ○○○○
Destination address: 12345 cho, Mishima city,
                     Shizuoka prefecture
Delivery contact address: box1221@ansinbox.ne.jp
Delivery contact address: 3nasubi@internet.ne.jp;
                          tel10559123456
Password: h12b3-4cd2h
Storage function: on
Notification function: on
[EDF]
```

FIG. 3

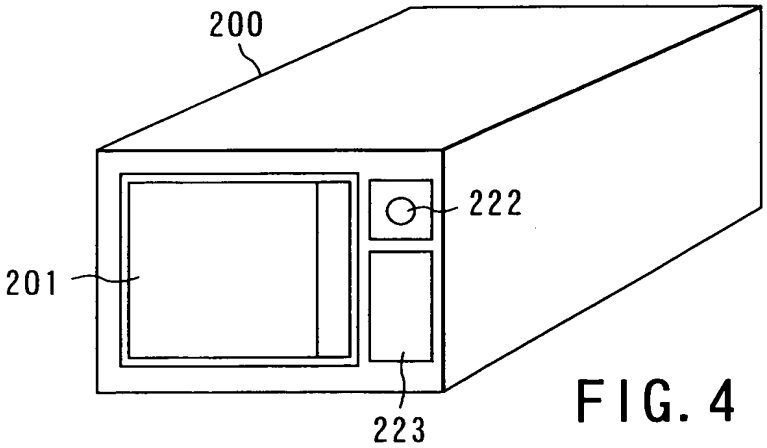


FIG. 4

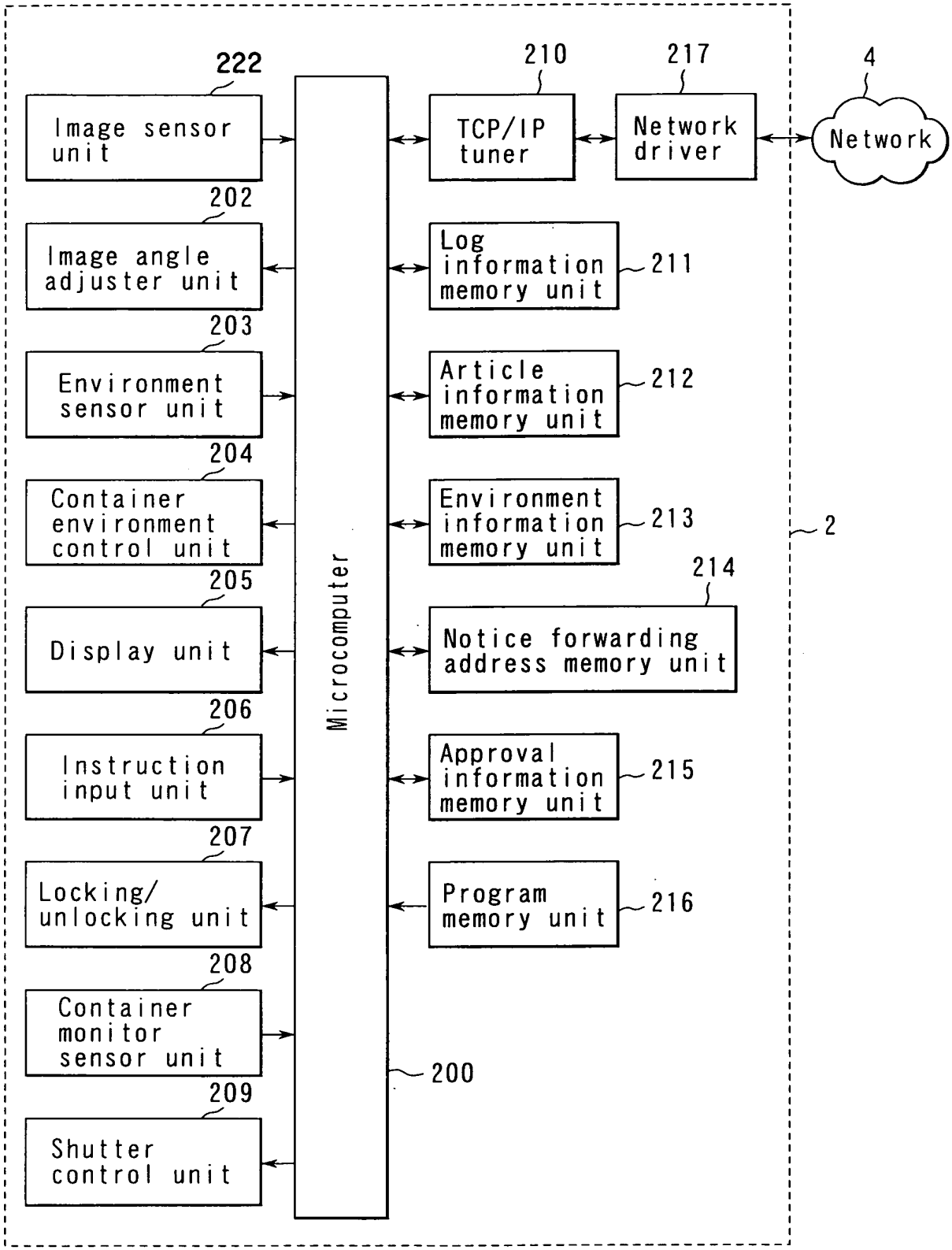

222
Image sensor unit
202
Image angle adjuster unit
203
Environment sensor unit
204
Container environment control unit
205
Display unit
206
Instruction input unit
207
Locking/ unlocking unit
208
Container monitor sensor unit
209
Shutter control unit
Microcomputer
200
210
TCP/IP tuner
217
Network driver
4
Network
Log information memory unit
211
Article information memory unit
212
Environment information memory unit
213
214
Notice forwarding address memory unit
Approval information memory unit
215
Program memory unit
216
2

FIG. 5

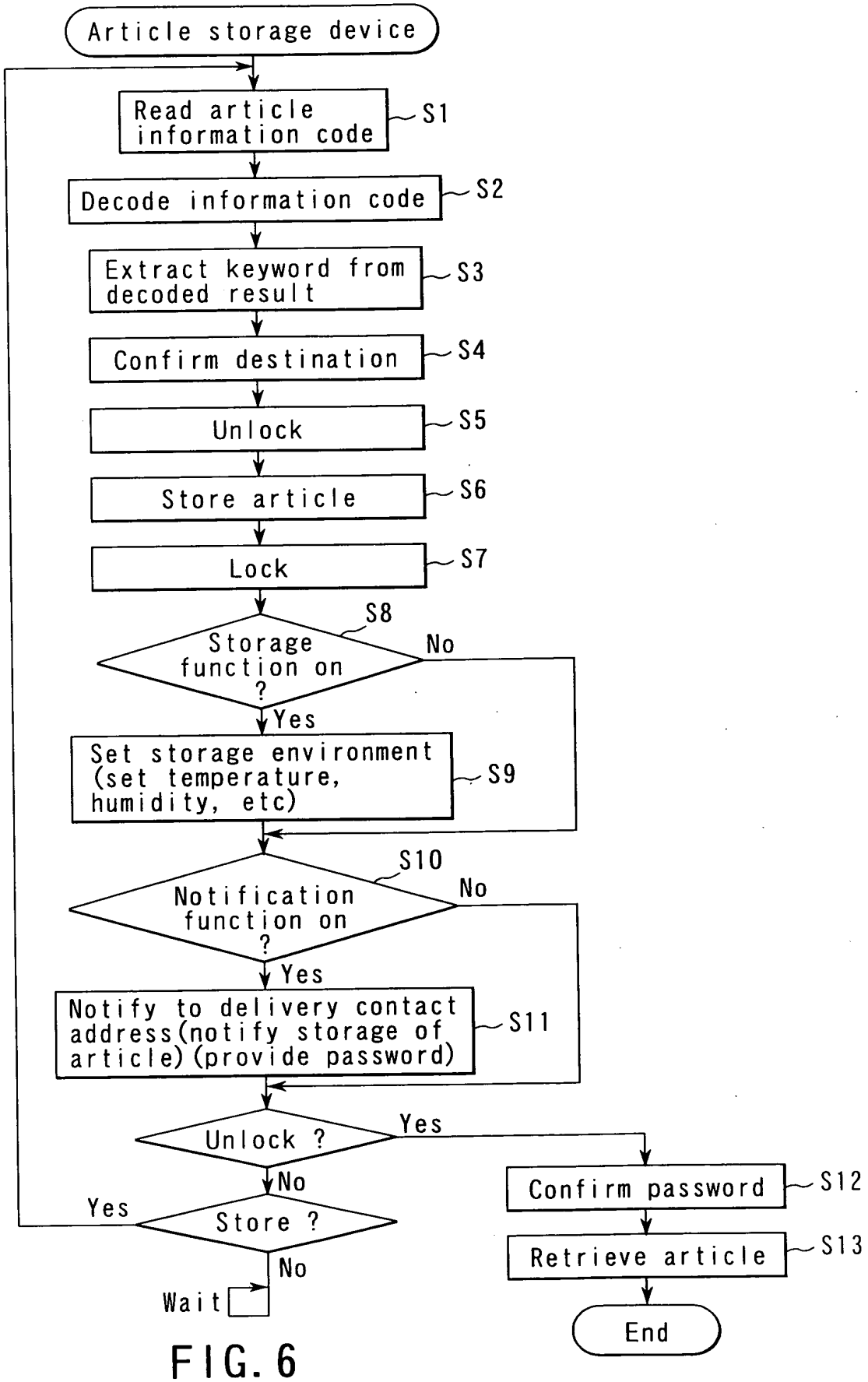

Article storage device
Read article information code
S1
Decode information code
S2
Extract keyword from decoded result
S3
Confirm destination
S4
Unlock
S5
Store article
S6
Lock
S7
S8
Storage function on ?
No
Yes
Set storage environment (set temperature, humidity, etc)
S9
S10
Notification function on ?
No
Yes
Notify to delivery contact address(notify storage of article)(provide password)
S11
Unlock ?
Yes
No
Confirm password
S12
Retrieve article
S13
Yes
Store ?
No
Wait
End

FIG. 6

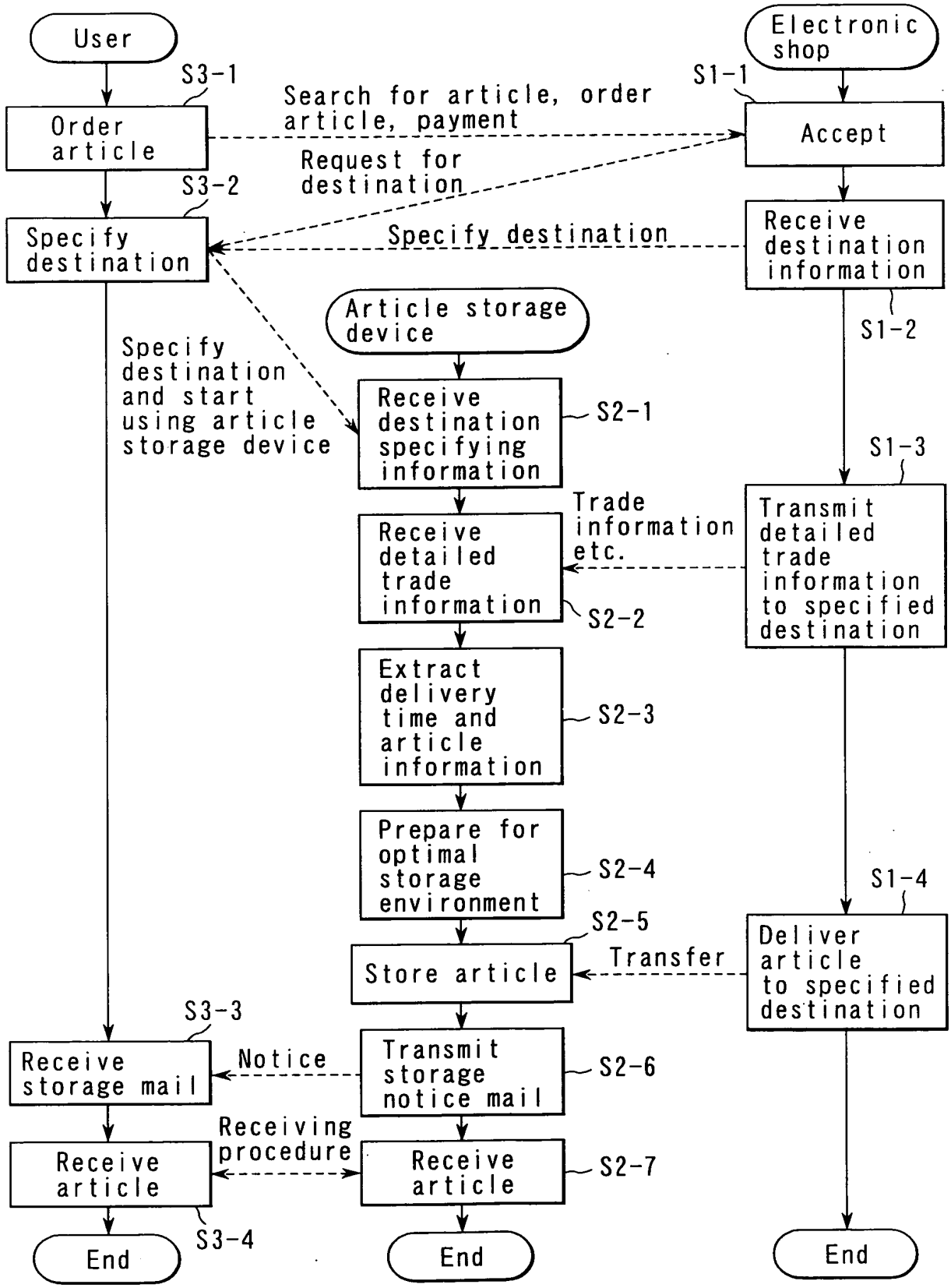

User
Electronic shop
S3-1
S1-1
Search for article, order article, payment
Order article
Accept
Request for destination
S3-2
Specify destination
Specify destination
Receive destination information
S1-2
Article storage device
Specify destination and start using article storage device
Receive destination specifying information
S2-1
S1-3
Trade information etc.
Receive detailed trade information
S2-2
Transmit detailed trade information to specified destination
Extract delivery time and article information
S2-3
Prepare for optimal storage environment
S2-4
S1-4
S2-5
Store article
Transfer
Deliver article to specified destination
S3-3
Receive storage mail
Notice
Transmit storage notice mail
S2-6
Receiving procedure
Receive article
Receive article
S2-7
S3-4
End
End
End

FIG. 7

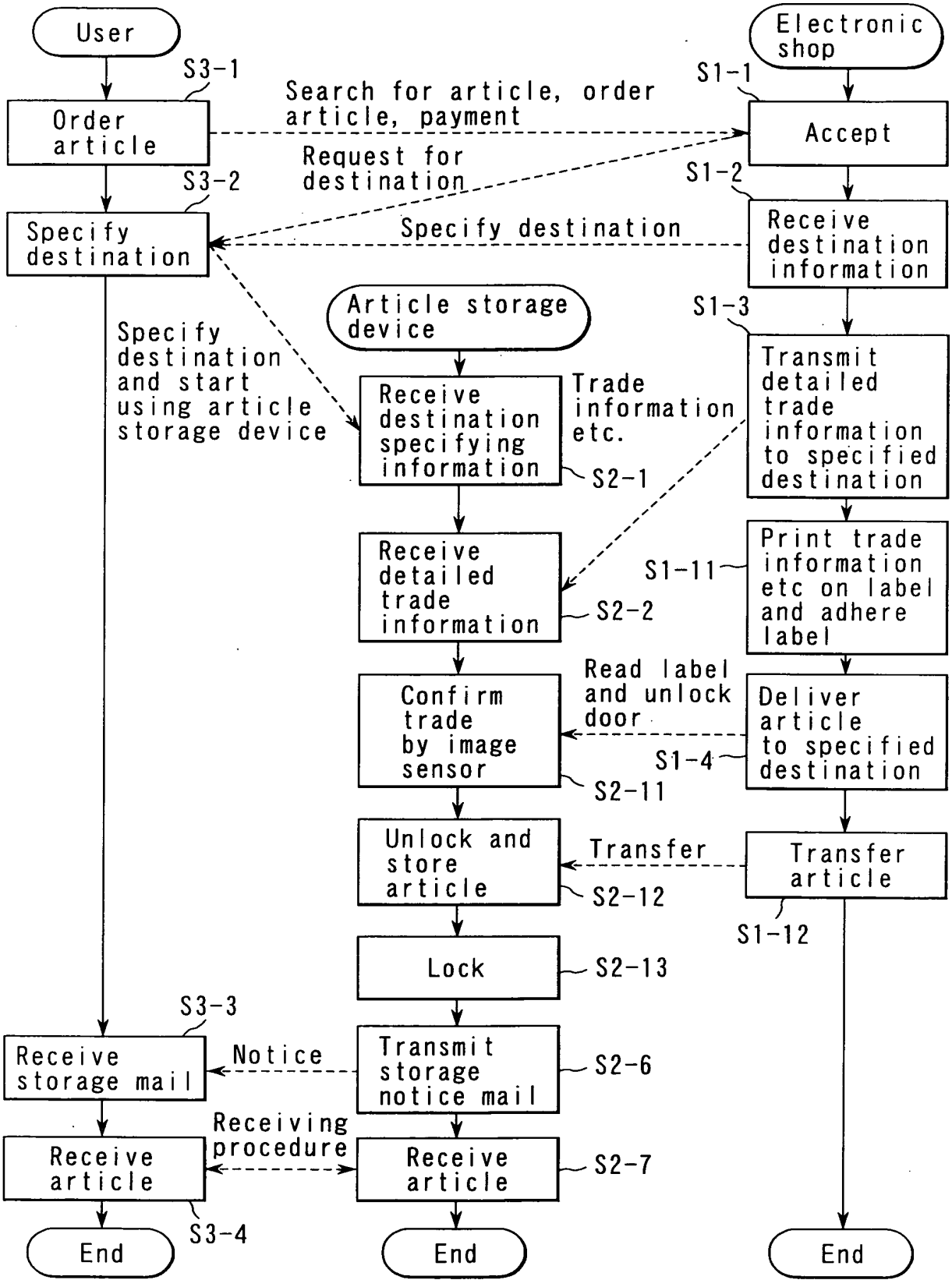

User
Electronic shop
S3-1
S1-1
Order article
Search for article, order article, payment
Accept
Request for destination
S3-2
S1-2
Specify destination
Specify destination
Receive destination information
Article storage device
S1-3
Specify destination and start using article storage device
Receive destination specifying information
Trade information etc.
S2-1
Transmit detailed trade information to specified destination
Receive detailed trade information
S2-2
S1-11
Print trade information etc on label and adhere label
Read label and unlock door
Confirm trade by image sensor
S2-11
S1-4
Deliver article to specified destination
Unlock and store article
Transfer
S2-12
Transfer article
S1-12
Lock
S2-13
S3-3
Receive storage mail
Notice
Transmit storage notice mail
S2-6
Receiving procedure
Receive article
Receive article
S2-7
S3-4
End
End
End

FIG. 8

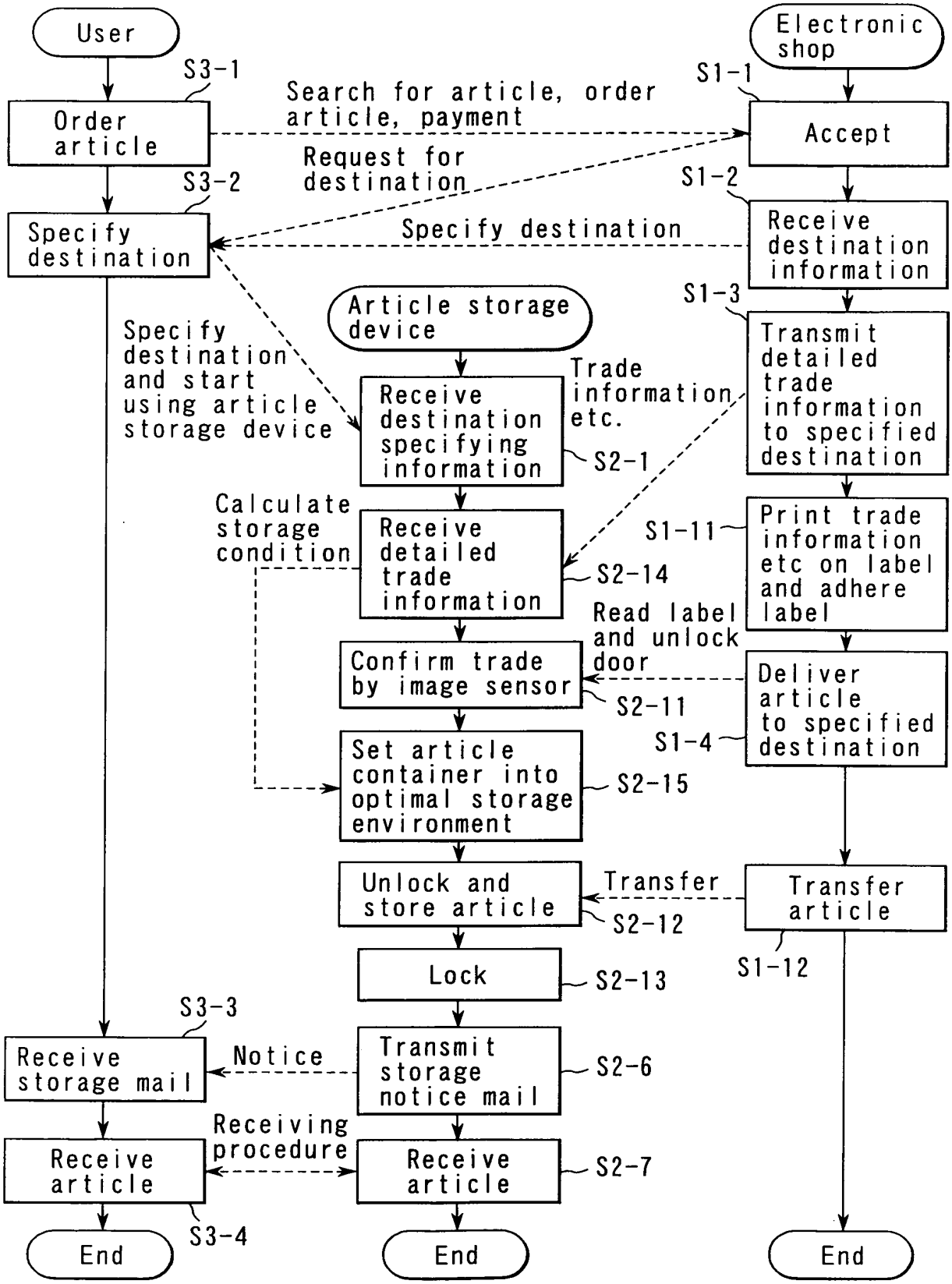

User
Electronic shop
S3-1
S1-1
Order article
Search for article, order article, payment
Accept
Request for destination
S3-2
S1-2
Specify destination
Specify destination
Receive destination information
Article storage device
S1-3
Specify destination and start using article storage device
Trade information etc.
Transmit detailed trade information to specified destination
Receive destination specifying information
S2-1
Calculate storage condition
Receive detailed trade information
S2-14
S1-11
Print trade information etc on label and adhere label
Read label and unlock door
Confirm trade by image sensor
S2-11
Deliver article to specified destination
S1-4
Set article container into optimal storage environment
S2-15
Unlock and store article
Transfer
Transfer article
S2-12
S1-12
Lock
S2-13
S3-3
Receive storage mail
Notice
Transmit storage notice mail
S2-6
Receiving procedure
Receive article
Receive article
S2-7
S3-4
End
End
End

FIG. 9

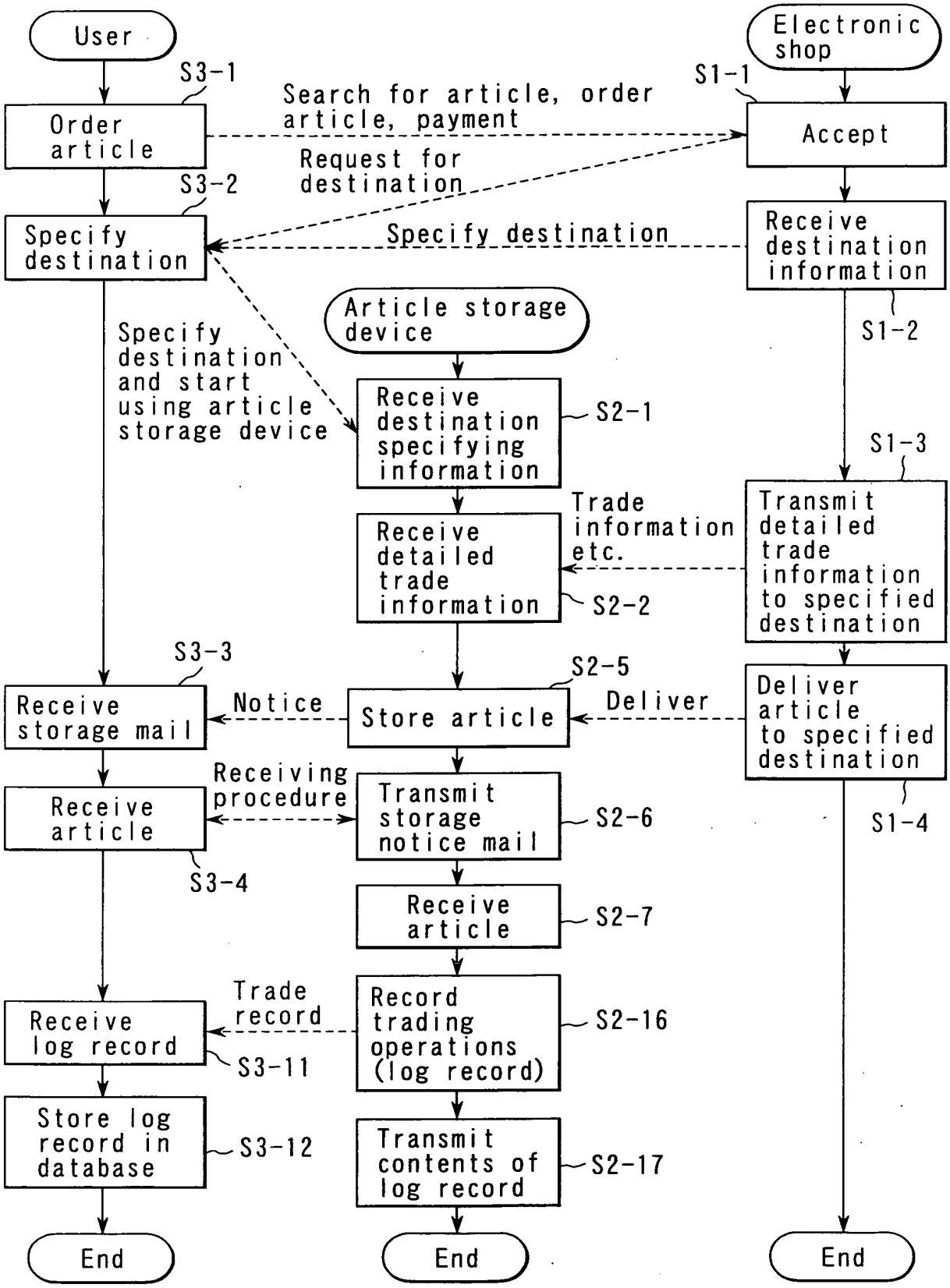

User
Electronic shop
S3-1
S1-1
Order article
Search for article, order article, payment
Accept
Request for destination
S3-2
Specify destination
Specify destination
Receive destination information
S1-2
Article storage device
Specify destination and start using article storage device
Receive destination specifying information
S2-1
S1-3
Trade information etc.
Receive detailed trade information
S2-2
Transmit detailed trade information to specified destination
S3-3
S2-5
Receive storage mail
Notice
Store article
Deliver
Deliver article to specified destination
Receiving procedure
Receive article
Transmit storage notice mail
S2-6
S1-4
S3-4
Receive article
S2-7
Trade record
Receive log record
Record trading operations (log record)
S2-16
S3-11
Store log record in database
S3-12
Transmit contents of log record
S2-17
End
End
End

FIG. 10

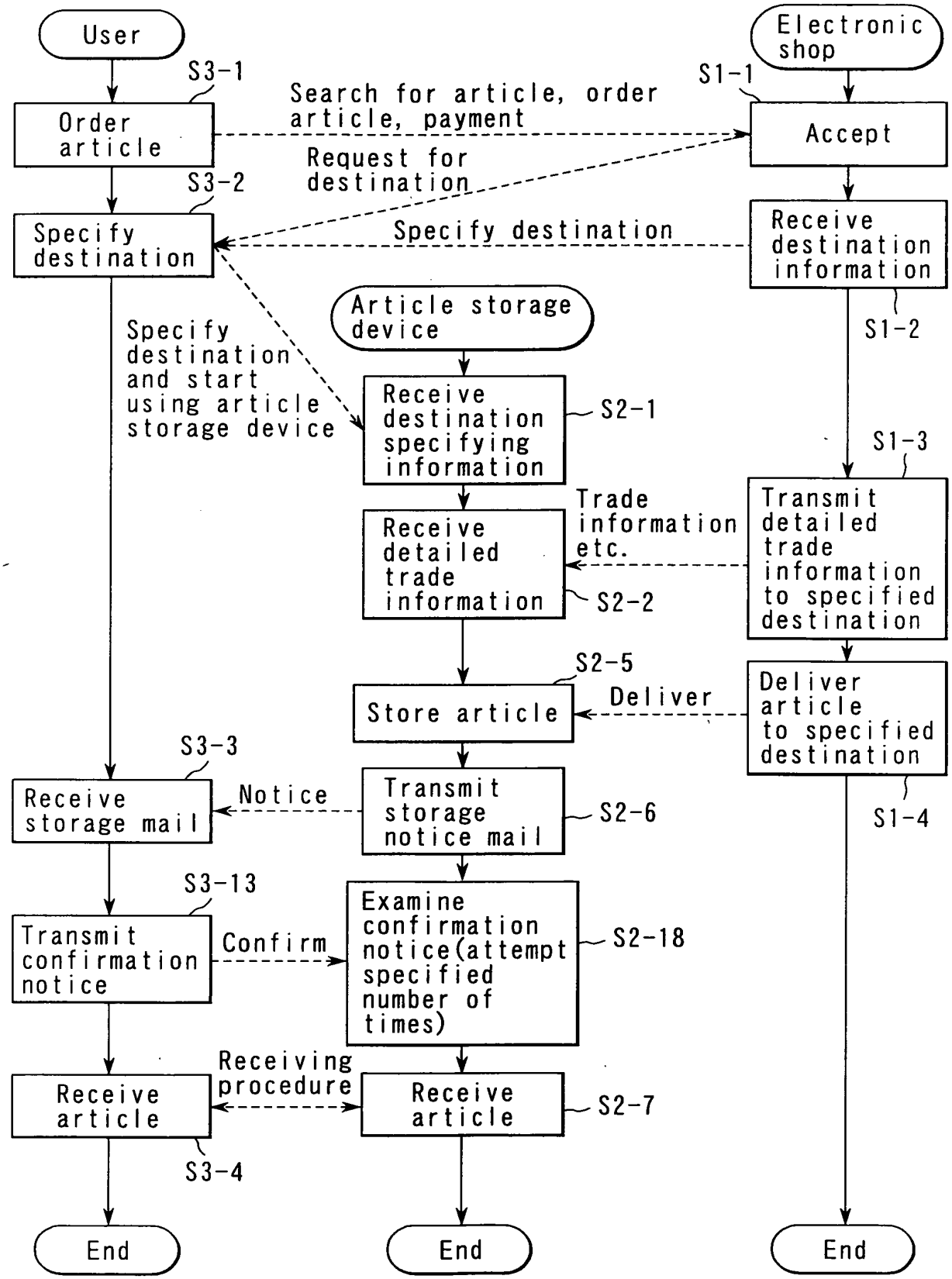

User
Electronic shop
S3-1
S1-1
Order article
Search for article, order article, payment
Accept
Request for destination
S3-2
Specify destination
Specify destination
Receive destination information
S1-2
Article storage device
Specify destination and start using article storage device
Receive destination specifying information
S2-1
S1-3
Trade information etc.
Receive detailed trade information
S2-2
Transmit detailed trade information to specified destination
S2-5
Store article
Deliver
Deliver article to specified destination
S3-3
Receive storage mail
Notice
Transmit storage notice mail
S2-6
S1-4
S3-13
Transmit confirmation notice
Confirm
Examine confirmation notice(attempt specified number of times)
S2-18
Receiving procedure
Receive article
Receive article
S2-7
S3-4
End
End
End

FIG. 11

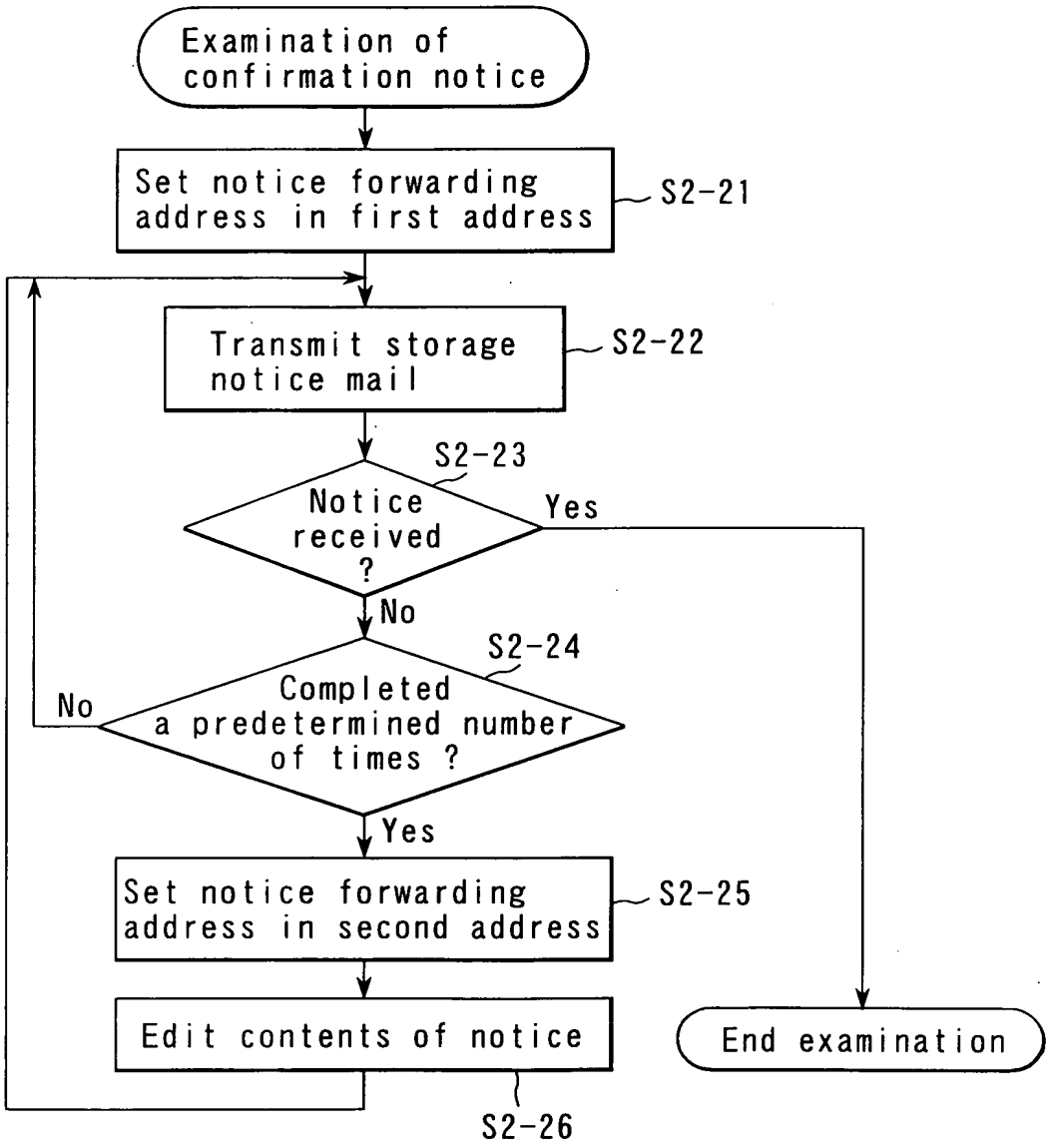

Examination of confirmation notice
Set notice forwarding address in first address
S2-21
Transmit storage notice mail
S2-22
S2-23
Notice received ?
Yes
No
S2-24
Completed a predetermined number of times ?
No
Yes
Set notice forwarding address in second address
S2-25
Edit contents of notice
S2-26
End examination

FIG. 12

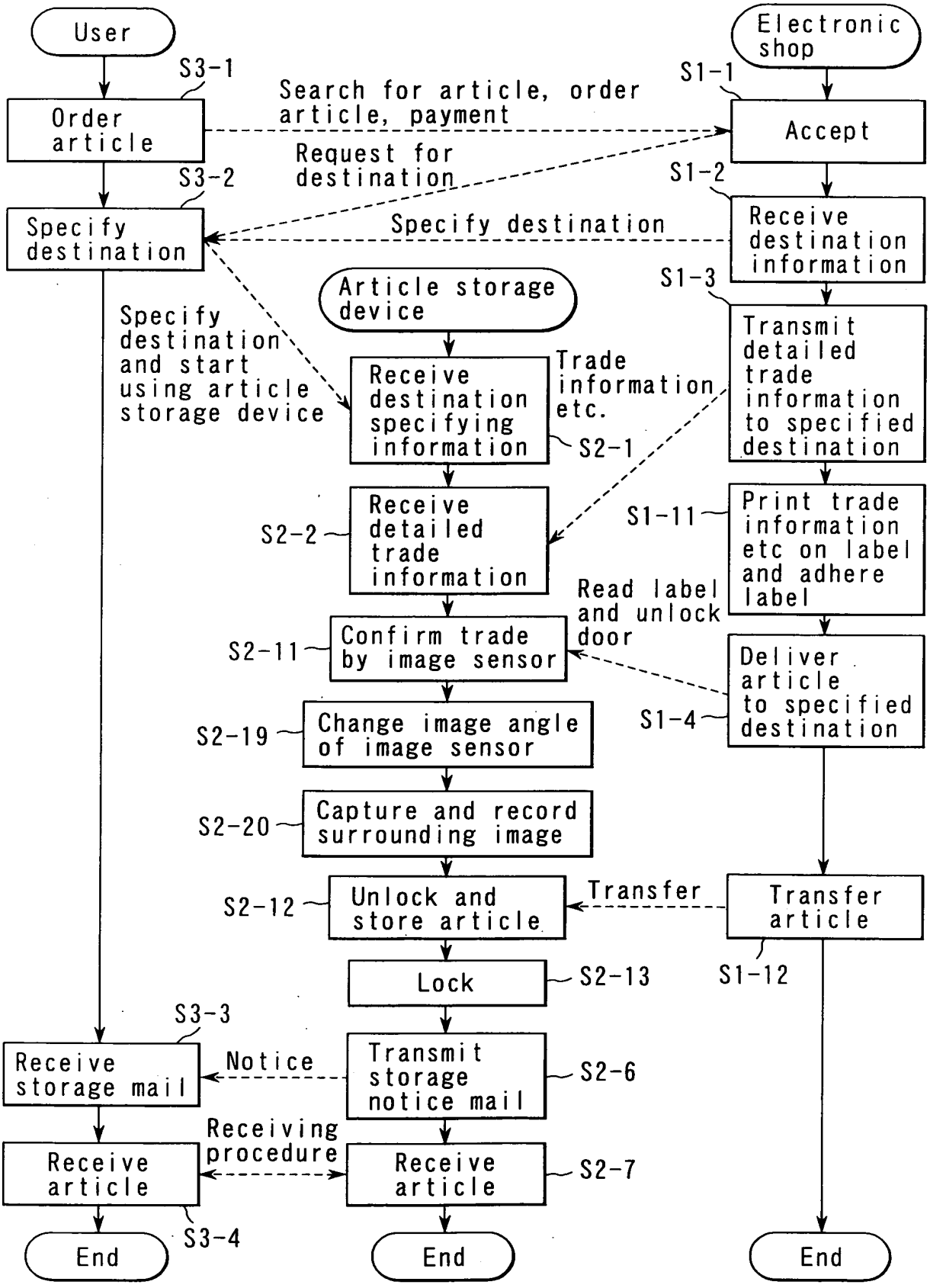

User
Electronic shop
S3-1
S1-1
Order article
Search for article, order article, payment
Accept
Request for destination
S3-2
S1-2
Specify destination
Specify destination
Receive destination information
Article storage device
S1-3
Specify destination and start using article storage device
Receive destination specifying information
Trade information etc.
S2-1
Transmit detailed trade information to specified destination
S2-2
Receive detailed trade information
S1-11
Print trade information etc on label and adhere label
Read label and unlock door
S2-11
Confirm trade by image sensor
Deliver article to specified destination
S1-4
S2-19
Change image angle of image sensor
S2-20
Capture and record surrounding image
S2-12
Unlock and store article
Transfer
Transfer article
Lock
S2-13
S1-12
S3-3
Receive storage mail
Notice
Transmit storage notice mail
S2-6
Receiving procedure
Receive article
Receive article
S2-7
S3-4
End
End
End

FIG. 13

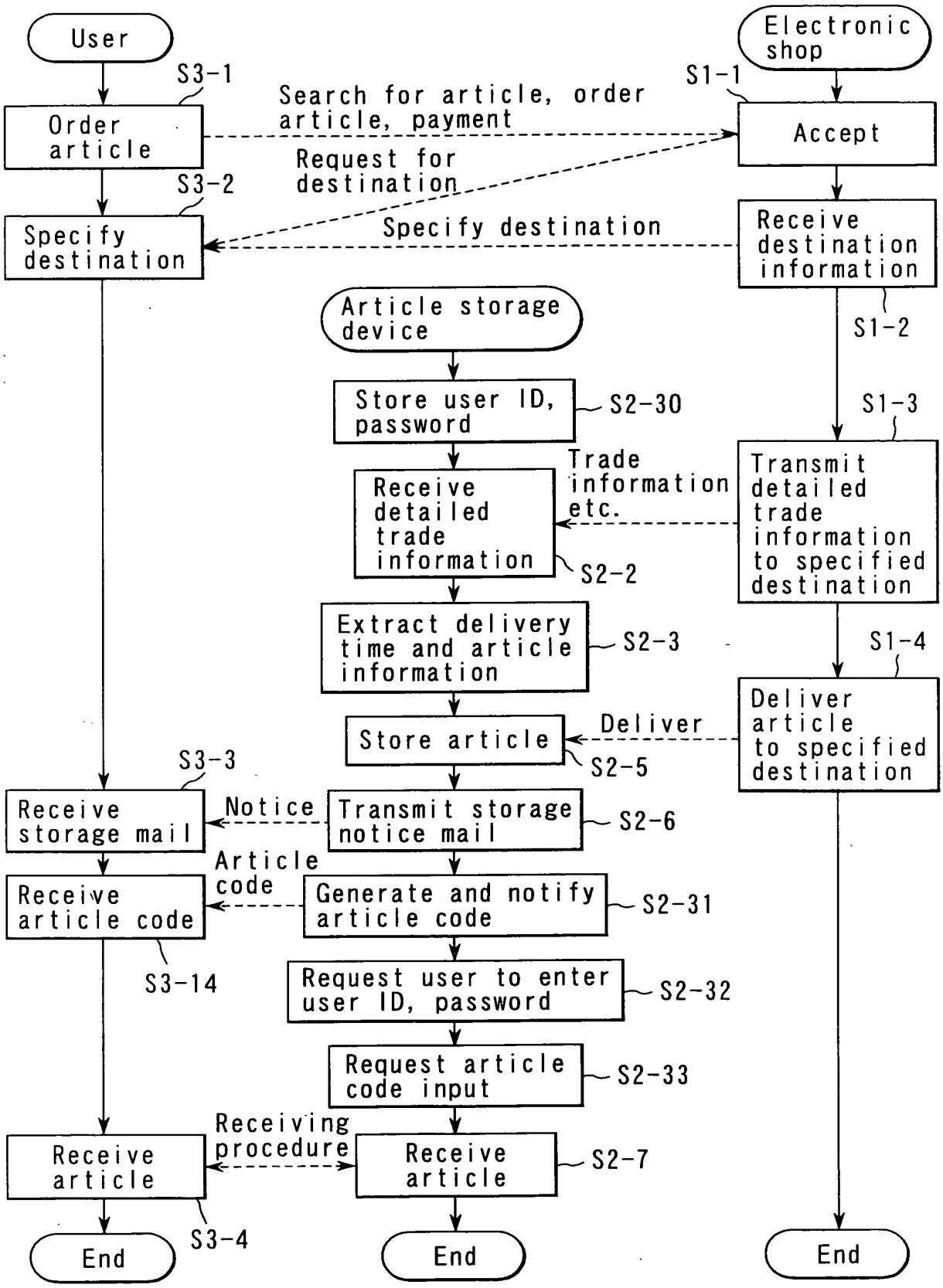

User
Electronic shop
S3-1
S1-1
Order article
Search for article, order article, payment
Accept
Request for destination
S3-2
Specify destination
Specify destination
Receive destination information
S1-2
Article storage device
Store user ID, password
S2-30
S1-3
Trade information etc.
Receive detailed trade information
S2-2
Transmit detailed trade information to specified destination
Extract delivery time and article information
S2-3
S1-4
Store article
Deliver
S2-5
Deliver article to specified destination
S3-3
Receive storage mail
Notice
Transmit storage notice mail
S2-6
Article code
Receive article code
Generate and notify article code
S2-31
S3-14
Request user to enter user ID, password
S2-32
Request article code input
S2-33
Receiving procedure
Receive article
Receive article
S2-7
S3-4
End
End
End

FIG. 14

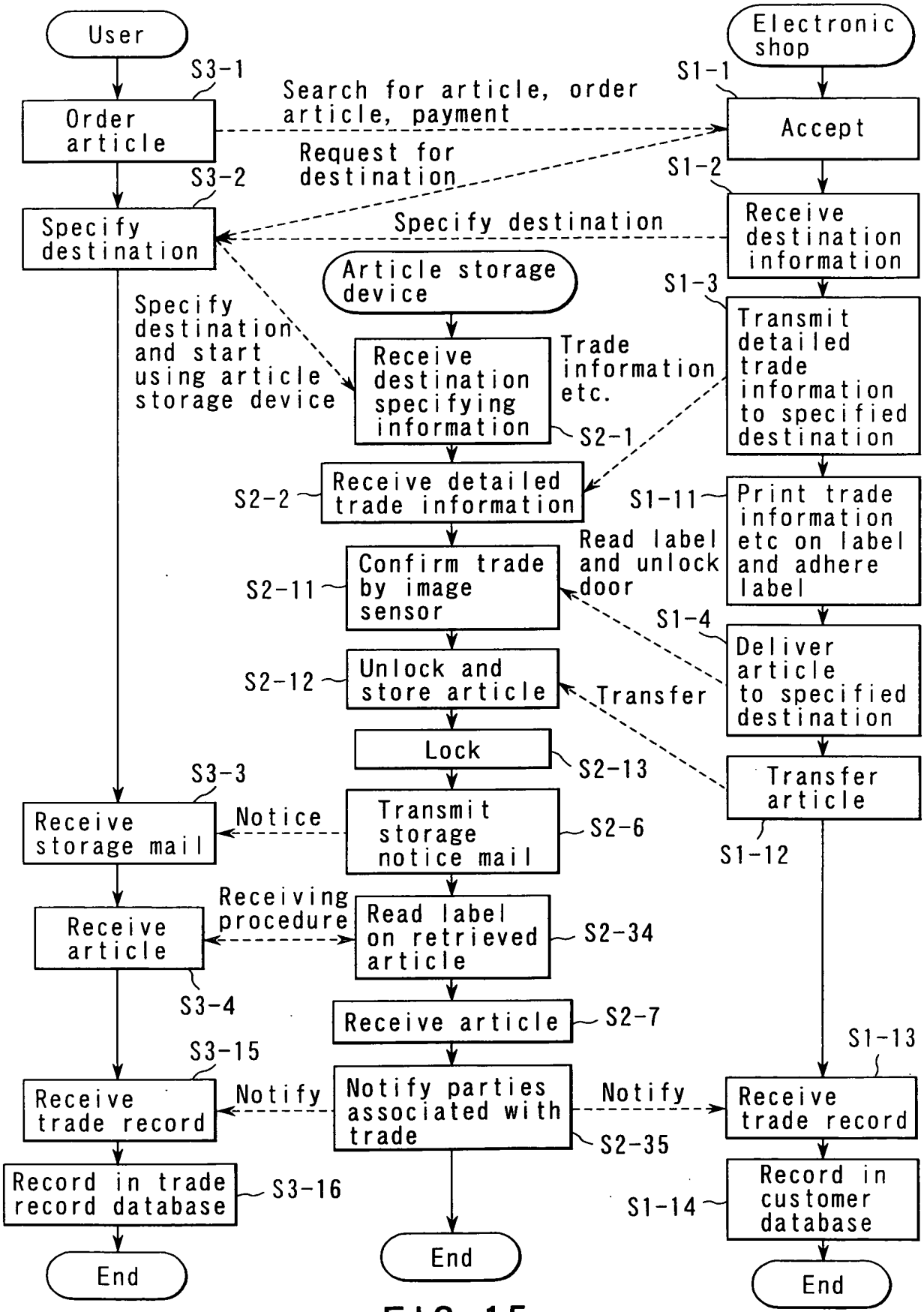

User
Electronic shop
S3-1
Order article
Search for article, order article, payment
S1-1
Accept
Request for destination
S1-2
S3-2
Specify destination
Specify destination
Receive destination information
Article storage device
S1-3
Specify destination and start using article storage device
Receive destination specifying information
Trade information etc.
Transmit detailed trade information to specified destination
S2-1
S2-2
Receive detailed trade information
S1-11
Print trade information etc on label and adhere label
Read label and unlock door
S2-11
Confirm trade by image sensor
S1-4
Deliver article to specified destination
S2-12
Unlock and store article
Transfer
Lock
S2-13
Transfer article
S3-3
Receive storage mail
Notice
Transmit storage notice mail
S2-6
S1-12
Receiving procedure
Receive article
Read label on retrieved article
S2-34
S3-4
Receive article
S2-7
S1-13
S3-15
Receive trade record
Notify
Notify parties associated with trade
Notify
Receive trade record
S2-35
Record in trade record database
S3-16
S1-14
Record in customer database
End
End
End

FIG. 15

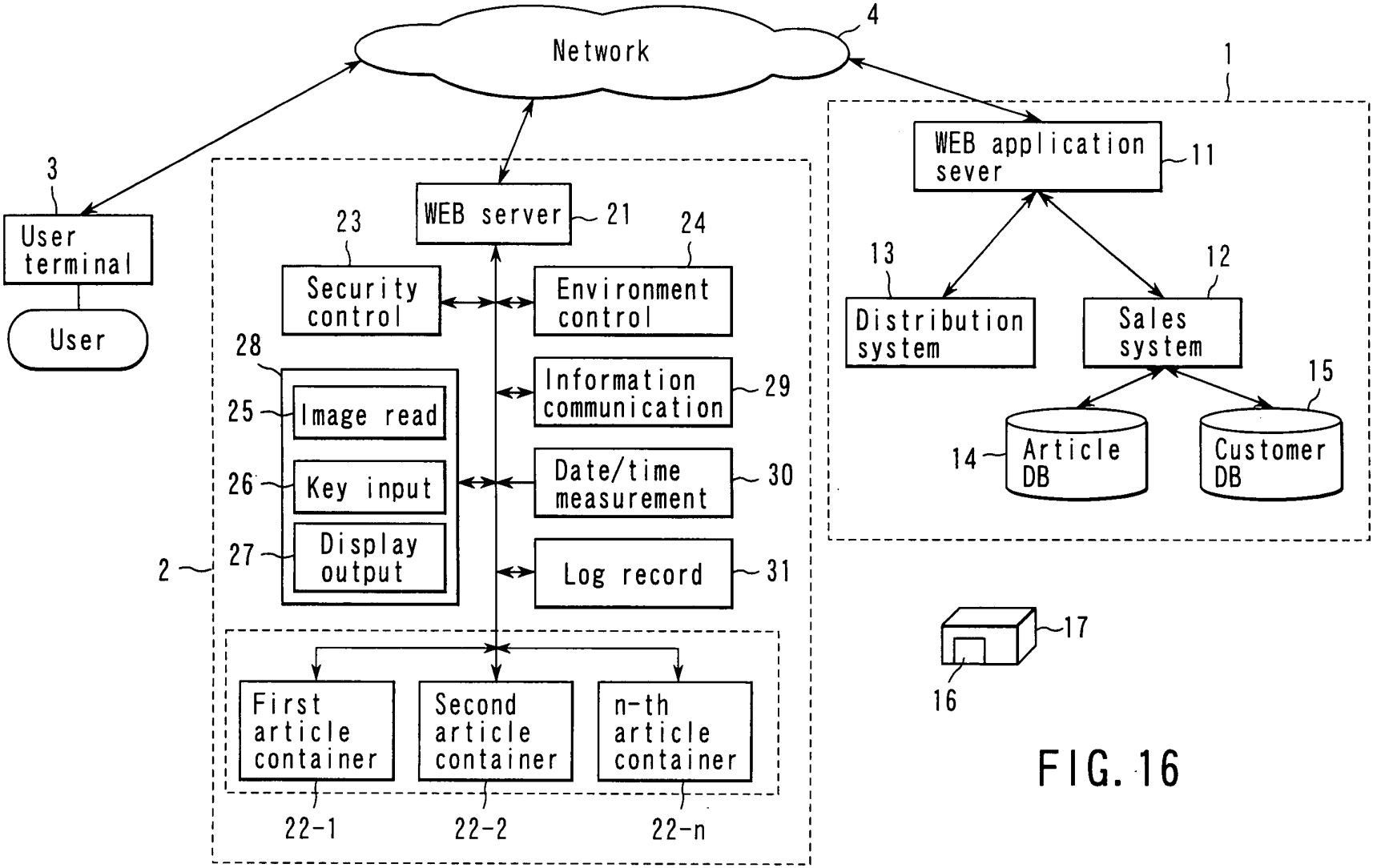

Network
4
1
3
User terminal
User
WEB server
21
23
24
Security control
Environment control
28
25
Image read
26
Key input
27
Display output
2
Information communication
29
Date/time measurement
30
Log record
31
First article container
Second article container
n-th article container
22-1
22-2
22-n
WEB application sever
11
13
12
Distribution system
Sales system
15
14
Article DB
Customer DB
17
16

FIG. 16

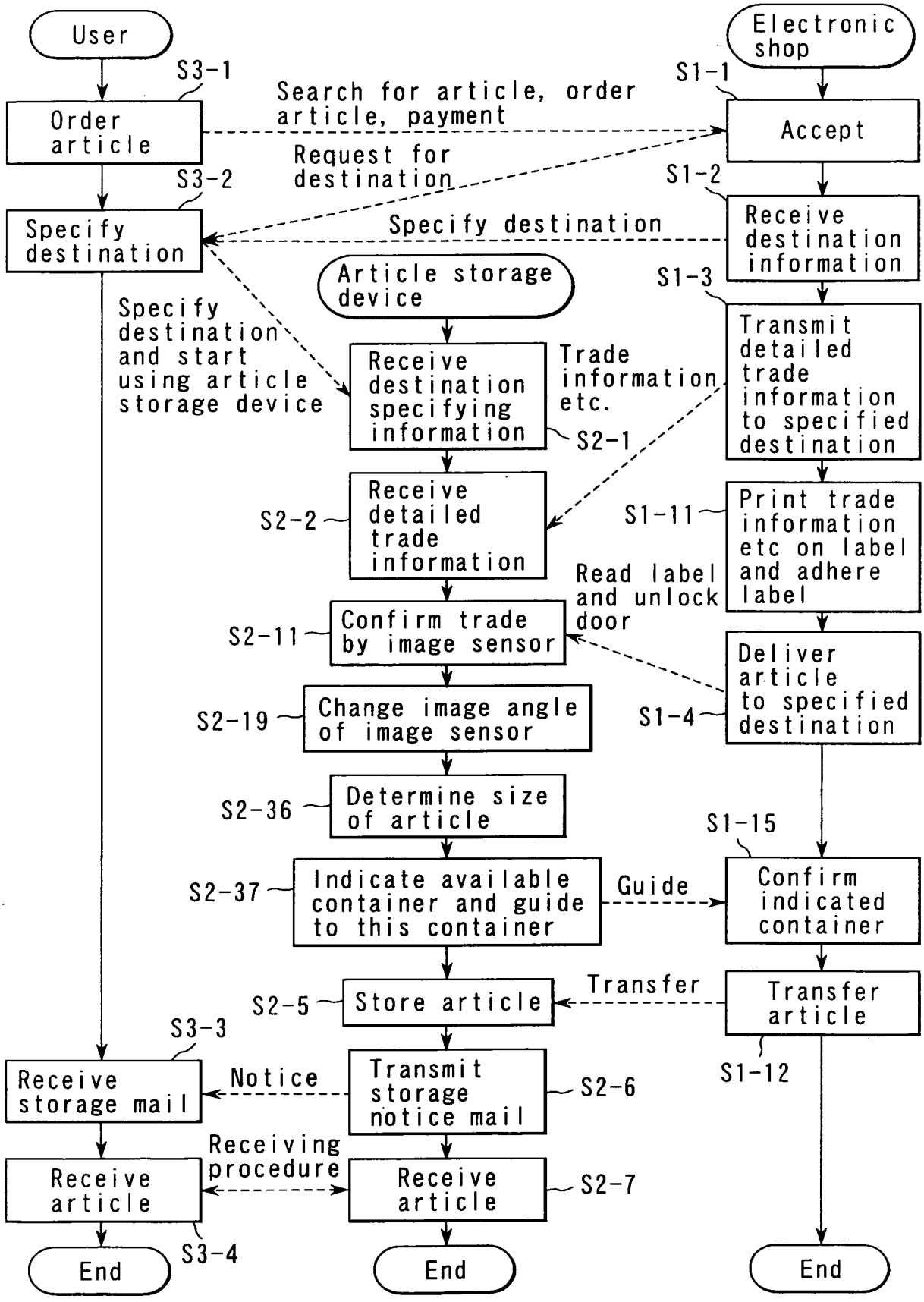

User
Electronic shop
S3-1
S1-1
Order article
Search for article, order article, payment
Accept
Request for destination
S3-2
S1-2
Specify destination
Specify destination
Receive destination information
Article storage device
S1-3
Specify destination and start using article storage device
Receive destination specifying information
Trade information etc.
S2-1
Transmit detailed trade information to specified destination
S2-2
Receive detailed trade information
S1-11
Print trade information etc on label and adhere label
Read label and unlock door
S2-11
Confirm trade by image sensor
Deliver article to specified destination
S2-19
Change image angle of image sensor
S1-4
S2-36
Determine size of article
S1-15
S2-37
Indicate available container and guide to this container
Guide
Confirm indicated container
S2-5
Store article
Transfer
Transfer article
S3-3
S1-12
Receive storage mail
Notice
Transmit storage notice mail
S2-6
Receiving procedure
Receive article
Receive article
S2-7
S3-4
End
End
End

FIG. 17

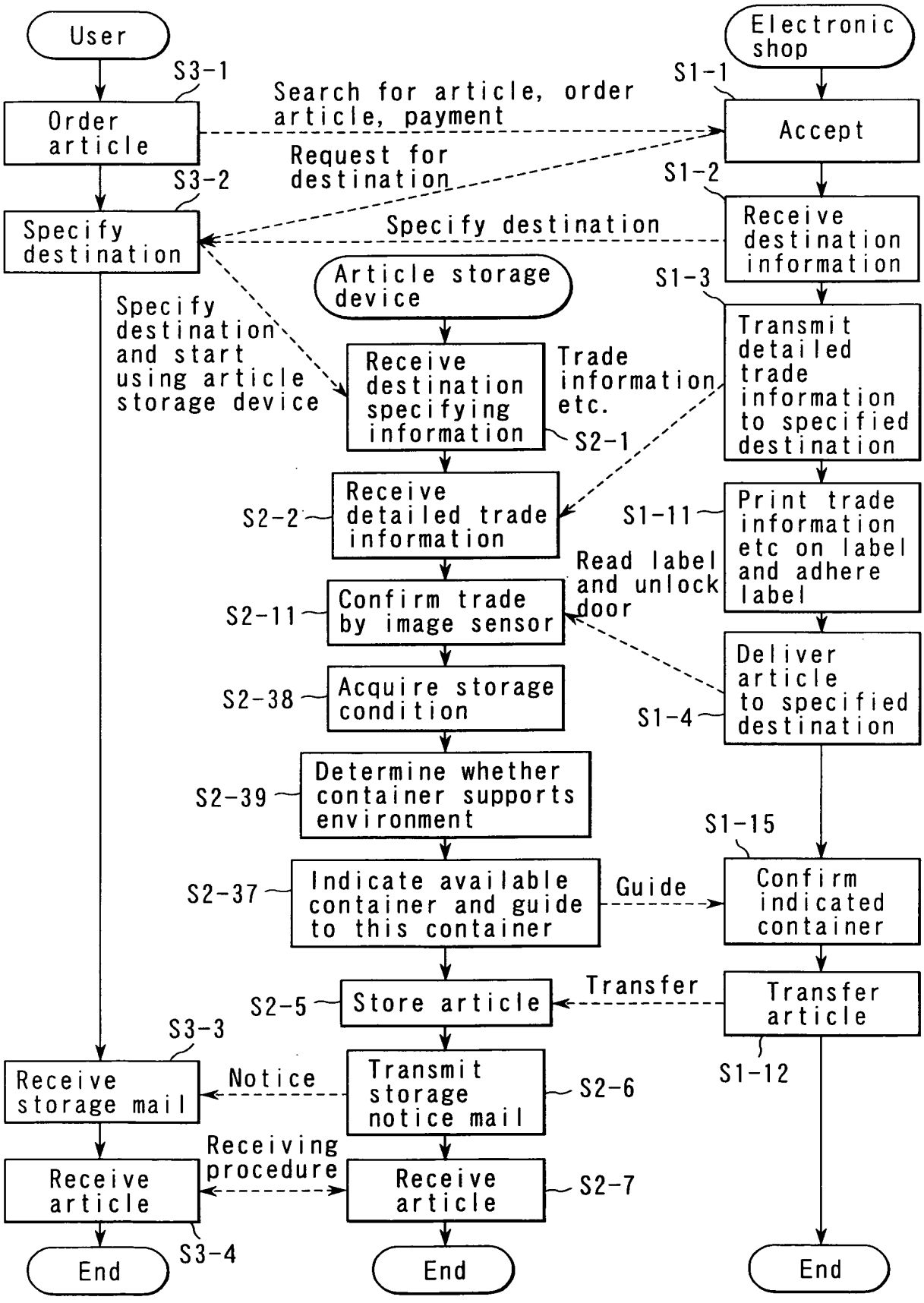

User
Electronic shop
S3-1
Order article
Search for article, order article, payment
S1-1
Accept
Request for destination
S1-2
S3-2
Specify destination
Specify destination
Receive destination information
Article storage device
S1-3
Specify destination and start using article storage device
Receive destination specifying information
Trade information etc.
S2-1
Transmit detailed trade information to specified destination
S2-2
Receive detailed trade information
S1-11
Print trade information etc on label and adhere label
Read label and unlock door
S2-11
Confirm trade by image sensor
Deliver article to specified destination
S2-38
Acquire storage condition
S1-4
S2-39
Determine whether container supports environment
S1-15
S2-37
Indicate available container and guide to this container
Guide
Confirm indicated container
Transfer
S2-5
Store article
Transfer article
S3-3
S1-12
Receive storage mail
Notice
Transmit storage notice mail
S2-6
Receiving procedure
Receive article
Receive article
S2-7
S3-4
End
End
End

FIG. 18

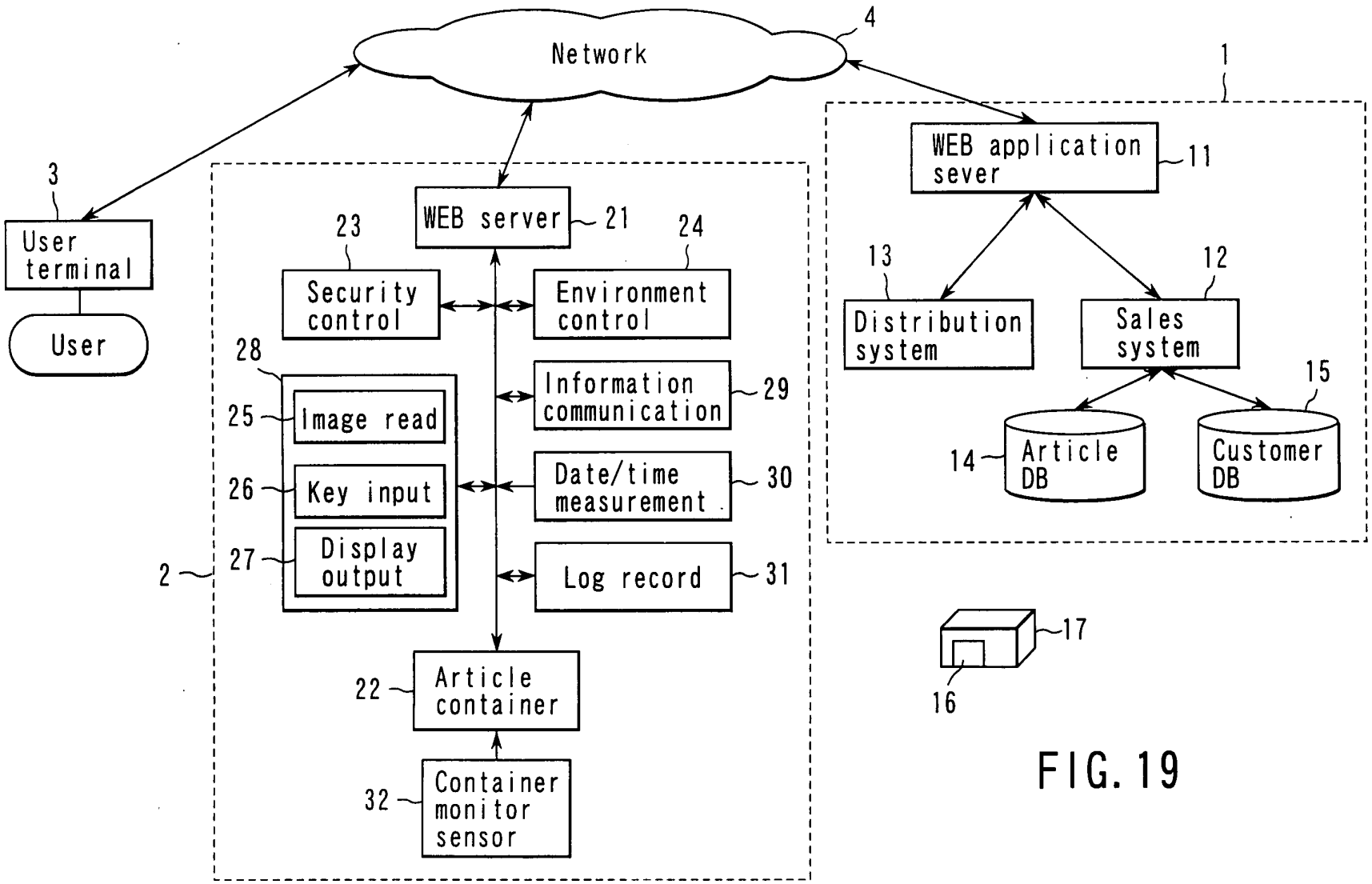

Network
4
1
3
User terminal
User
WEB server
21
23
24
Security control
Environment control
28
25
Image read
26
Key input
27
Display output
2
Information communication
29
Date/time measurement
30
Log record
31
22
Article container
32
Container monitor sensor
WEB application sever
11
13
12
Distribution system
Sales system
15
14
Article DB
Customer DB
17
16

FIG. 19

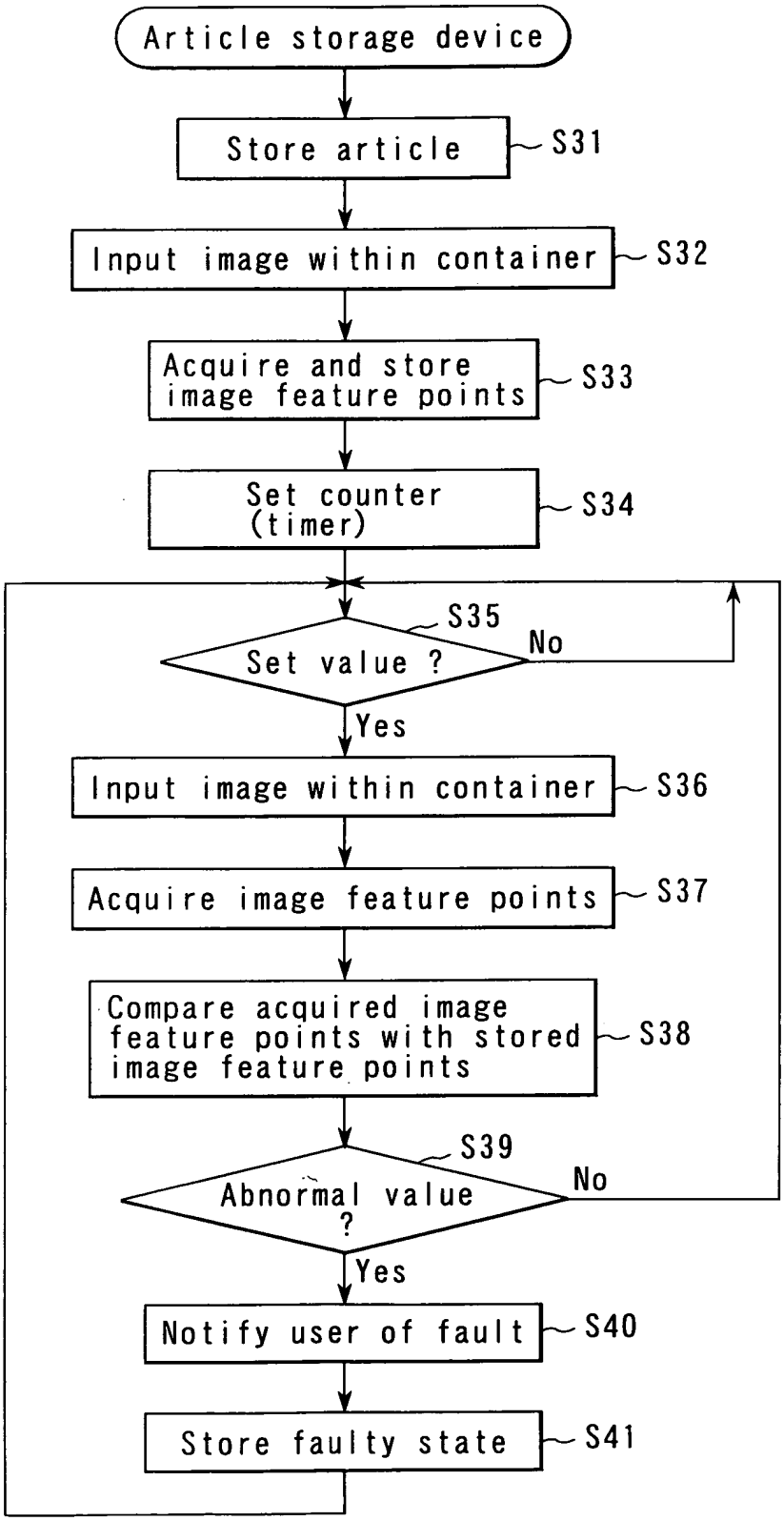

Article storage device
Store article
S31
Input image within container
S32
Acquire and store image feature points
S33
Set counter (timer)
S34
S35
Set value ?
No
Yes
Input image within container
S36
Acquire image feature points
S37
Compare acquired image feature points with stored image feature points
S38
S39
Abnormal value ?
No
Yes
Notify user of fault
S40
Store faulty state
S41

FIG. 20

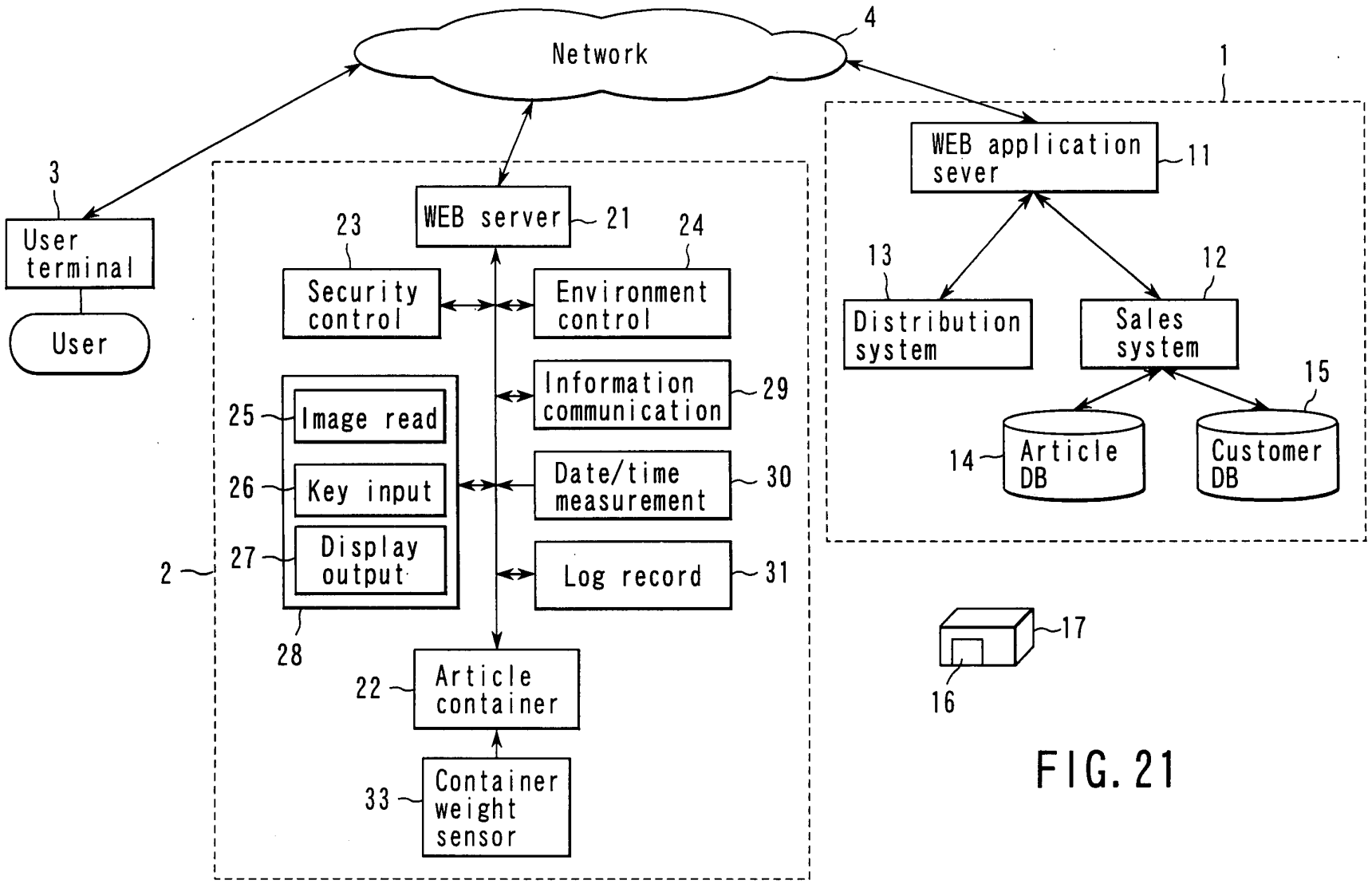

Network
4
1
3
User terminal
User
WEB server
21
23
24
Security control
Environment control
Information communication
29
25
Image read
26
Key input
27
Display output
2
28
Date/time measurement
30
Log record
31
22
Article container
33
Container weight sensor
WEB application sever
11
13
12
Distribution system
Sales system
15
14
Article DB
Customer DB
17
16

FIG. 21

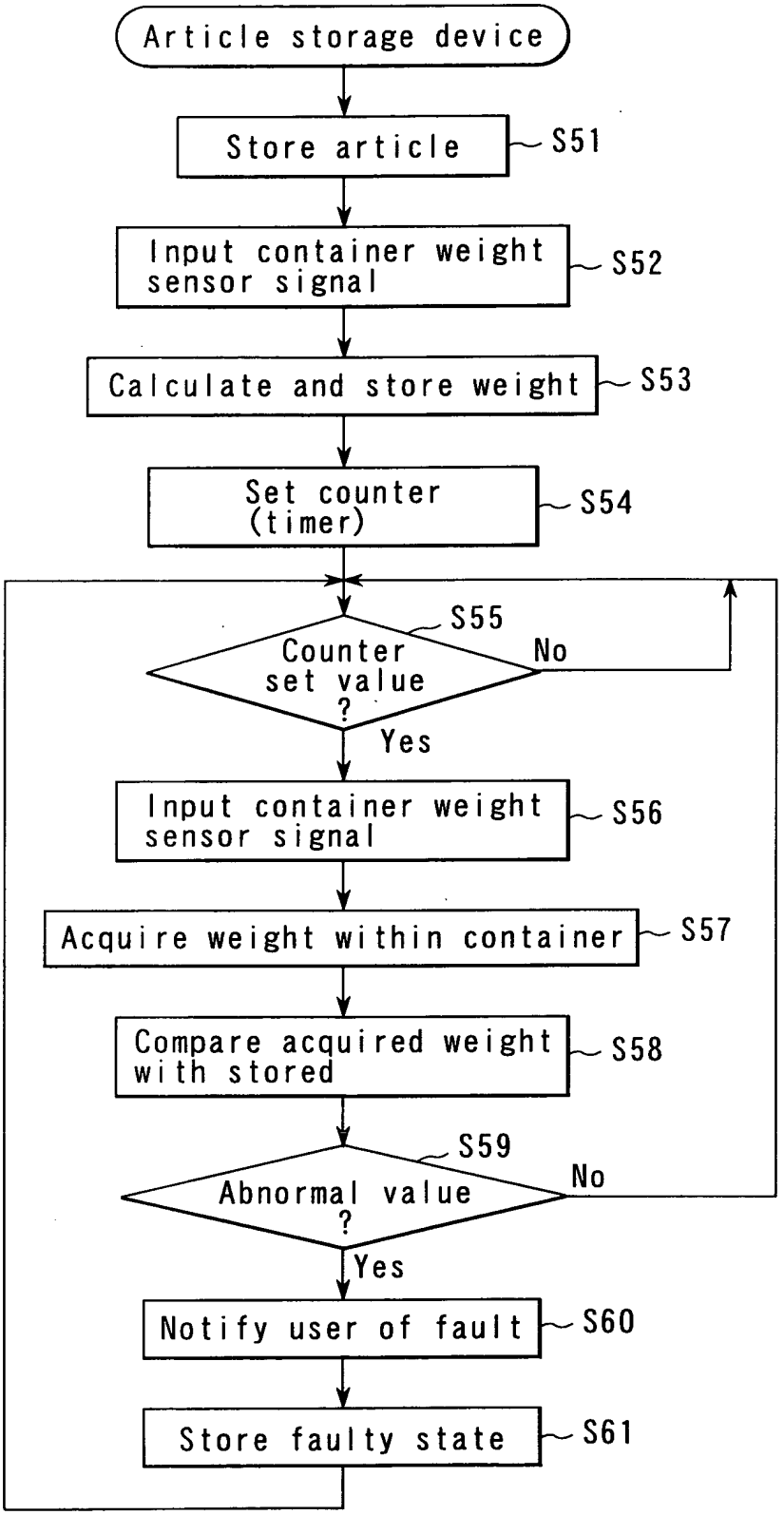

Article storage device
Store article
S51
Input container weight sensor signal
S52
Calculate and store weight
S53
Set counter (timer)
S54
S55
Counter set value ?
No
Yes
Input container weight sensor signal
S56
Acquire weight within container
S57
Compare acquired weight with stored
S58
S59
Abnormal value ?
No
Yes
Notify user of fault
S60
Store faulty state
S61

FIG. 22